upward and form quasi-vertical planes. The points still to be settled are:—1. Why these layers when turned up should not re-mix with the general mass, if their separation is due only to gravity, especially when as thin as $\frac{1}{50}$ inch, or $\frac{1}{100}$ of their length? 2. Why a particular sharply-defined space in the above figure should be avoided by the lines? 3. Are the causes the same as those preventing the uniform diffusion of charcoal dust in water?

These figures are not due to any form of caustic curves, though mistaken for such at first sight, and therefore neglected.

W. M. Flinders Petrie

Velocity of Light

If you can spare the space please state that the corrected result for the velocity of light (Nature, vol. xxi. p. 94) is—

299944 ± 50 kilometres,
or 186380 ± 33 miles per second.

A. A. Michelson

328, Fifth Avenue, New York, N.Y., December 17, 1879

The Word "Telegraph"

I have recently had occasion to ascertain the period when the word "Telegraph" first came into use; the following may be of interest to your readers:—

It is not mentioned in Johnson's Dictionary, 1810, but it occurs in the edition of 1818. In that valuable work, Rees's "Encyclopædia," 1819, vol. xxxv., we find:—"The word telegraph, which is derived from two Greek words, *τῆλε*, at a distance, and *γράφω*, to write, was brought into use about 1793 or 1794, when the French Directory established machines of this kind for communicating intelligence between Paris and all the principal towns in France. The British Government soon after adopted the same measure, and it has since become very general." So that telegraph and semaphore are both of French origin.

In the grand French "Encyclopédie" of Diderot—1778—the word telegraph does not occur.

Warren De La Rue

73, Portland Place, W., December 31, 1879

The Lophiomys

As the oft-repeated statement (which originated with M. Alphonse Milne-Edwards) *that the roofed-in temporal fossa of the Lophiomys finds its parallel in certain reptiles alone* reappears in the pages of Messrs. Cassell's excellent "Popular Natural History" (see Nature, vol. xxi. p. 137), it is high time that it should be modified in accordance with more recent anatomical investigations, which show that two *amphibian* genera, Pelobates and Calyptocephalus, participate in this singular abnormality.

Beddington Park — Paul Henry Stokoe

Scorpion Suicide?

Mr. F. Gillman's note (vol. xx. p. 629) in favour of scorpion suicide carries with it its own refutation, as will be seen by examining the details of his cruel experiment. Given the "circle of glowing charcoal embers a foot or so in diameter," and the inference is that the central temperature of that circle would be well nigh "glowing" too; dropped into this fire-bound ring, the poor scorpion would at once be scorched nigh unto death, and to escape the ensuing agony, why does it not, then and there, commit suicide? No, "after vain attempts to get away," in each of which it is more and more scorched, if not absolutely burned in its head, its vital powers fail, and its last instinctive throe is to gather its limbs together as much as possible, away from the heat. The heat has killed it, and I defy Mr. Gillman, or any one else to prove that, in this experiment, the scorpion "pierces its head with its sting and dies" in consequence.

As our winter has set in, and the crickets had gone into winter quarters, I determined upon giving my scorpions an opportunity of doing the same, so, taking them into the garden, I emptied them into a hole. I only mention this to illustrate my remarks on change of colour in lizards, for, taking my scorpions into the sun, out of a comparatively dark room, each individual distinctly assumed a lighter hue on the way to the hole.

Peshawar — R. F. Hutchinson

Strange Incubation in Fishes

Apropos of my note on strange incubation in fishes, I send you, *quantum valeat*, an extract from Mrs. Yelverton's *olla podrida* of travels, "Teresina Peregrina," vol. ii. pp. 15, 16: "His Highness (the Tumangong of Johore) had a splendid collection of orchids, which it seemed to gratify him to point out to me. I recognised many of them as my old friends, the acanthus-shaped denizens of the Cambogian forests, from whose urn-like leaves my people used to bring me down the little fish. This *bouleversement* of natural history may sound like a traveller's tale, but the explanation is simple.

"The aquatic birds often drop the spawn of the fish into the calixes (*sic*) of these beautiful parasites, which the next shower of rain turns into basins or pools of water, wherein the little fish first opens his eyes and receives its consciousness, probably believing firmly that it is the proper thing for a fish to live in a tree (so strong are early impressions), while all the rest of the world, fish, flesh, and fowl, view him with amazement.

"Many of our beliefs have not one whit more solid foundation than this fish's belief in the cornucopia of the orchid being a real fish-pond, because a few accidental fish got there through the slavering of some ill-mannered water-fowl." !!!

Peshawar, December 2, 1879 — R. F. Hutchinson

FURTHER NOTES UPON THE PAPUANS OF MACLAY COAST, NEW GUINEA[1]

II.

Objects of Art.—Specimens down to the simplest and commonest ornament were collected, or, at any rate accurately copied by M. Maclay, for the reason that the natives of Maclay Coast were still in the "Stone age"—a period which will soon belong to the past, and of which the relics are yearly becoming rarer and rarer. The implements as yet discovered by the Papuans, and upon which artistic skill has been expended come under two categories. 1. Fragments of flint, shells, and bones. 2. Chipped stones in the form of axes. The ornaments themselves may be divided into three classes. (*a*) Ornaments properly speaking, engraved, or drawn on their own account solely, and serving none other than a decorative purpose. (*b*) Ornaments and drawings demonstrating the first beginning of the figurative or ideal style of writing. (*c*) Ornaments, sketches, and carvings, which stand in relation to the superstitions and dark stage of religious ideas among the Papuans.

1. *Ornaments in the strict Sense of the Word.*—The salient character of most Papuan ornaments is that they are for the most part rectilinear, and for the reason that bamboo and reed, from which the majority of their utensils are made, are best adapted for such style of decoration, for it is, as Maclay has practically convinced himself, difficult to draw or scratch round and circular designs upon the substance, while straight lines, on the contrary, can be made with ease, the tools being sharp fragments of flint or shell. It is upon the bamboo receptacles for lime for betel chewing, but more especially upon the large comb which is worn by all men that their decorative skill is principally expended. That style of ornament which of necessity was adopted for articles of bamboo, is also applied to such as are of other material, *e.g.*, wood or clay, for the Papuan, in general with the rest of mankind, is influenced by laziness, for he lacks the energy to make trial of such designs as would be more suitable for the latter kind of material. Some of the designs, however, upon wood are of a curved and circular character, but these are difficult to make with such primitive tools as the Papuan possesses. A slight scratch with a piece of flint suffices to mark a line upon the epidermis of bamboo, while in the case of wood, strong pressure and tedious scraping or scratching are necessary to produce a superficial design. More trouble, moreover, is expended upon things made of wood, such as drums and canoes (*praus*).

That the want of variety in subjects of decoration does not proceed from lack of inventive power and skill is shown by the fact that directly after use was made of the sherds of glass bottles collected near Maclay's hut new refinements and variations were introduced into their wood ornamentation. As regards the pottery ware, since this is made by the women, and as the latter are wanting in artistic sense or in interest in their work, it is quite devoid of ornament.

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[1] Continued from p. 206.

2. *The Origin of the Development of Symbolic Characters.*—M. Maclay believes that he discovered by accident the use of an ideograph ("Ideenschrift") by the Papuans in a very rudimentary form. He noticed upon the façade of the *buambramra* of a neighbouring village a row of shields formed from the leaf-bladders of the sago-palm, on which rude figures, *e.g.*, fish, snakes, suns, and stars were painted in various combinations. Their meaning puzzled him for a long time, and from insufficient knowledge of the language he was for a long period unable to inquire about it. In the forests, too, he remarked similar enigmatical symbols carved upon the bark of the trees; also upon the sides of the praus which came from the Islands of Contentment. The riddle remained unsolved until the occasion of a feast, several months later, given in celebration of the launch of two large canoes on which the natives had been working for a long time, when a solution suddenly presented itself. Towards the end of the feast one of the younger guests jumped up, took a coal, and began to sketch a row of primitive figures upon a plank which lay near. These symbols had a great resemblance to those which Maclay had previously remarked upon the trees, canoes, &c., and were sketched in the following order. First came a representation of the two newly launched *praus*, drawn as though half upon the shore and half in the water; then followed a drawing of men carrying two pigs tied fast to a stake, victims doomed to be sacrificed for the feast. After these were represented, a row of large *tabir*, equivalent in number to the "covers" which had been served at the banquet, while the rear was brought up by a drawing of Maclay's canoe, conspicuous by its large flag, two large sailing canoes from the Archipelago of Contentment, and a number of smaller ones without sails, from the neighbourhood of Bili-bili. This group, which symbolised the various guests present at the feast, was drawn as a *souvenir* of the banquet, and Maclay saw it several months afterwards. Further observations have led M. Maclay to the conclusion that representations such as that just mentioned, are not to be regarded in the light of pictures or sketches, but as rudiments of a primitive ideograph — "primitive Ideenschrift" — a conclusion which has been borne out by later observations. M. Maclay was impressed with the variety in the representation of the commonest objects, which implies a very limited comprehension of drawing and renders it an utter impossibility for any other [than the artist?] to understand this primitive writing, or pictorial mnemonic medium. A man, for example, was actually represented by the same artist (1) as a rough human shape; (2) as a face with eyes and a large mouth; (3) as a comb[1] with a plume of feathers, and, lastly, as the "membrum virile," and it is very probable that there are many other symbols besides having an analogous signification. Besides the pictorial representations, the Papuans of Maclay Coast employ several mnemonic appliances to aid in remembering important events; for in every village may be seen suspended "in memoriam," various objects, such as bones, as a *souvenir* of a great feast, cocoa-nut shells, of a less important feast—no animal having been slaughtered on the occasion—a dry bunch of leaves or an empty basket, the former hung up by some friend in remembrance of a visit, the latter in which some present had been brought, being left behind as a hint for some gift in return. In every *buambramra* hang rows of the lower jaws of pigs and dogs, skulls of fish and of various marsupial animals, in remembrance of feasts, successful fishing and hunting parties, and visits of friends; serving thus as a veritable calendar of the events of past months and years.

3. *Sculpture in Wood.*—To this category belongs principally the fairly numerous quantity of carvings which, if not precisely as idols, may nevertheless be regarded as objects standing in a very intimate relation to the religious ideas of the Papuans. Such, under the common term, *Telum*, were seen by M. Maclay in nearly every village, and accurate drawings were made of no less than twenty-one of them, interesting as they were not only as specimens of the art of the stone age, but as affording many a guide to the relationship of the Melanesian races. A *Telum* consists of a human figure, of either sex, fashioned out of wood, or, more rarely, from clay. Nearly all wear peculiar head-dresses, and those of the male sex have the genitals of an enormous size. In a mountain village a *Telum* was discovered with the body of a man, but the head of a crocodile, for which a turtle served as a kind of cap, and in the same village another human figure was found which held with both hands a tablet covered with various symbols. In all figures the nose, as is the custom among the Papuans, is bored through, and every *Telum*, moreover, of which several may be found in each village, has its own special name. As for the significance of these wood-carvings, M. Maclay is not quite certain upon this point, although he is sure that they stand in some relation to the rudimentary religious conceptions (*Vorstellungen*) of the Papuans, for in some of the hill villages large stones even were seen to be honoured as *Telums*. If, on the other hand, we regard these representations from an æsthetic point of view, we shall be again forced to admit the artistic capabilities of the Papuans, their great perseverance, as well as the way in which simple decorations become transformed into bas-relief, and again from *alto relievo* into the complete figure; for in Papuan art of the "stone age," such a series of progressive steps is demonstrated in the completest manner.

Superstitions and their Resulting Customs.—With regard to "Tabu,"[1] this custom exists in New Guinea, but M. Maclay did not succeed in finding out any equivalent term for it in the Papuan tongue, though frequent examples of it could be recognised in the various restrictions put upon the actions of women in their relation to the men. For example they are forbidden to set foot within the *buambramra*, they are excluded from all feasts, and every dainty which they prepare for the latter, especially the principal drink, *Keu*, is forbidden to them as well as the children. The meeting places of the men, music, musical instruments, and even the mere hearing of the same is strict *Tabu* for the women, for as soon as the sound of one is heard in the neighbourhood, they and the children must instantly flee. To the repeated inquiry of Maclay as to the reason of the above exclusion of the women, the answer was invariably returned—"It would never do, for the women and children would fall ill and die."

Music and Song.—The performance on all instruments of music, which are collectively included under the term "*Ai*," is allowed to the men alone. They are as follows:—

The "*Ai-Kabrai*."—This consists of a bamboo, about two yards and more in length, and about fifty millimetres in diameter, from which all the septa between the internodes have been removed so that the whole consists of a single long tube. This instrument is put into the mouth, and through its large orifice the performer blows, shrieks, or howls, the sound being audible in still weather at a distance of from two to three miles. The word "*Kabrai*" is (in the Papuan dialect), the name of a species of parrot, with a loud screaming voice.

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[1] "Kamm," a comb or crest.

[1] Accounts of "*Tabu*" will be found in "Tylor's Researches into the Early History of Mankind," London, 1865, and in Captain Cook's "Voyage to the Pacific Ocean," Vol. i.i., p. 163, London, 1784. "This word" (*loc. cit.* p. 164) "is used to express anything sacred, or eminent, or devoted. Thus the King of Owhyhee was called *Eree-taboo*; a human victim, *Tangata-taboo*; and in the same manner, among the Friendly Islanders, Tonga, the island where the king resides, is named *Tonga-taboo*."—J. C. G.

"*Munki-Ai.*"—This equally simple and ear-splitting instrument is made out of the shell of one of the smaller kinds of cocoa-nut (*Munki*), in which a hole is bored both in the side and in the upper end; a shrill piping tone being produced by blowing through the upper hole, and alternately stopping and leaving free the side one by means of a finger. This instrument is often elaborately and artistically ornamented.

"*Hol'-Ai.*"—This is a curved or straight wind-instrument, of the character of a trumpet, made out of the root of a kind of *Lagenaria*.[1]

The three just described are not strictly wind-instruments, as compared with those of a European model, but are rather of the character of a ship's speaking-trumpet, in that they are only used for strengthening the human voice, though the tunes produced are of extreme variety.

"*Orban-Ai.*"—This consists of a handle from which a number of perforated Orban-nut shells hang, each at the end of a cord. When this is shaken the shells strike against one another, producing a kind of rattling sound, which at times resembles the rustling of foliage caused by a breeze.

"*Okam.*"—This is a kind of drum made from a hollowed tree stem, over the upper end of which the skin of a Monitor lizard is stretched, while the lower end remains open.

For purposes of signalling, a triton-shell perforated at the side is used, and by this means the arrival or departure of the *praus* which come from Bili-Bili or the "Archipelago of Contentment" is made known.

All the above-mentioned instruments of music are *Tabu* to the women and children, being, like the wooden carvings, regarded as something sacred, and this to such a degree that M. Maclay had great difficulty in obtaining from their owners specimens for his collection.

The songs of the Papuans of Maclay Coast are of the very simplest, being confined to a few words which are perpetually repeated, sometimes in solo, sometimes in chorus. They are almost always improvised, the composition being prompted by the advent of guests, some occupation or other, or the most trifling events.

Under the common term "*Ai*" are included the feasts which are celebrated by the Papuans from time to time. The guests are summoned from the surrounding villages by a number of beats on the *Barum*, repeated at prescribed intervals, while the *Malassi* bring out the various utensils and instruments of music from the *Buamramra*. Baskets full of the root of the Colocasia (*Bau*), and the fruit of the Dioscorea (*Ajan*) are brought, of which a certain quantity is contributed by each male guest, and added to the general heap, each fresh arrival being greeted with applause. At length there arrives, bound to a stake carried by two men, and greeted with cries of joy, the principal object of the feast, a pig, richly decked out with the red flowers of the *Hibiscus*. The victim is laid on the ground, and, after a long oration from one of the Tamos, is despatched by a thrust of a spear in the armpit. As for dogs, which are not unfrequently eaten at feasts, they are slaughtered by being swung round by the hind legs and the head dashed against a tree trunk. Fowls, rats, the cuscus, and smaller marsupials are killed in the same manner. After the pig has been killed and the hair singed off over a large fire, it is placed on a number of banana leaves spread on the ground. In all the details of preparation for the feasts the Papuans show a remarkable appreciation of division of labour, for everything is done without noise or confusion. While the cooking of the various portions of food is taking place, the guests set about the brewing of their two favourite drinks, the *Munki-la* and the *Keu*. In order to make the first, green cocoa-nuts, after they have been stripped of their fibrous outer coating, are split down the middle by a single blow from a long stone implement, and the watery contents collected in a *Tabir*. The halves of the nuts having been distributed, each guest sets to work to shred the kernel with his *Jarur* into the bowl until the latter is filled to the brim with a whitish, gruelly mess. The second drink is thus made:—The fresh leaves of the *Keu*[1] plant, together with the young twigs, are chewed without further preparation, while the old and hard roots are previously softened by bruising with a stone. For this end all the young men play the part of living masticatory machines, their teeth fulfilling the function of millstones set in motion by the action of the "masseter" muscles. If one of them is tired out before the mass is soft enough, he forthwith spits it out into his hand, rolls it into a ball, and hands it over to a neighbour to finish the process. After having been duly masticated, the *Keu* is filtered by means of an apparatus consisting of two halves of a cocoa-nut shell, the upper of which, having an aperture in the middle, covered with some finely crushed grass, serves for a filter, while the lower receives the filtrate. To this latter, which is of a greyish-green colour, some water is added, and it is then left standing. Every *Keu* drinker has his own bowl reserved for this purpose alone, and carefully kept in his pouch, or *gun*. It consists of the shell of a small cocoa-nut, the inner surface of which is of a uniform greenish-grey colour, a result probably of the custom forbidding all cleaning of the interior, while the outer is decorated with various devices and coloured with a black pigment.

At length there rings over from the village, two or three short *Barum* tones, as a signal that the banquet is ready, and the *Keu* drinkers assemble, surrounded by the younger men. Each then rests his bowl in a shallow hole made by a lance in an area of ground previously cleared for the purpose, and into it the thick fluid is poured from the large *Keu* bowl. After a preliminary coughing and spitting, in order to clear out the mouth, each, in the order of seniority, or social standing, drinks his portion with many a grimace, as the infusion is very bitter; and in some instances, passes urine at the same moment. After this the guests proceed to eat, and when their hunger is appeased, the grated cocoa-nut infusion, *Munki-la*, is served round. If the pig is too small for all to partake of, only the men are allowed to eat of it, it being *Tabu* to the "Malassi," or youths, who will then on no account touch it, as they have the firm belief that if this rule be violated either illness or some calamity will inevitably overtake them. The feast is brought to a close by smoking and the chewing of Betel nut, and the "Siri" leaf. If, as is sometimes the case, there are not enough eatables for the feast, a supplementary banquet is held, the materials for which have to be first procured by an improvised fishing party. In order to keep the women and children from disturbing the guests when feasting, the musical instruments are brought into play, which, as before stated, is an infallible means of keeping them at a distance. Finally, as a *memento* of the feast, the lower jaw of the pig or dog which has figured on the principal dish is hung up in the *Buamramra*.

During the month of November and December, when the Papuans are less occupied in the plantations, certain other kinds of feast take place, of which at the first, called "*Ai-mun*," only the men are allowed to be present, while at the second, the "*Sel'-mun*," held in the villages, the presence both of women and children is permitted. At the *Ai-mun* very curious masked processions are formed, and here the *Aidogan*, a kind of *telum* consisting of numerous figures carved one over the other out of one tree stem, play a conspicuous part, after having been brought, fresh painted, from the village to the feasting place. Sometimes there is even a migration of the revellers into another village, which generally results in a kind of sham fight between the two parties.

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[1] A genus belonging to the order *Cucurbitaceæ*.

[1] According to Dr. Scheffer, director of the Botanic Garden at Buitenzorg, near Batavia, to whom they were submitted, the *Keu* plants brought by M. Maclay from Papua belong to two distinct species of the genus *Piper*, but neither of the two is identical with the *Kava* plant of Samoa. It is, moreover, doubtful even if this latter is really the *Piper methysticum*.

With regard to Betel chewing and tobacco-smoking, both these habits are very prevalent, and freely indulged in by the people inhabiting Maclay coast. Nevertheless, the *Areca* palm is by no means abundant on the coast, being, with the exception of the "Archipelago of Contentment" and a few other spots, but seldom found in the villages. The process of Betel-chewing is as follows: The Areca nut having been first partly masticated, is then mixed with a little powdered lime, which is carried in a special box formed from bamboo or a calabash gourd, and, after being rolled in a Betel[2] leaf or two, is placed between the teeth and chewed. Although the tobacco plant, here called *Kas'*, is much cultivated, and flourishes well along the whole coast, the American tobacco, pressed flat into cakes, which Maclay had brought with him, was so much liked and prized, that he contributed a portion at almost every *Ai* feast. This, after being separated into its component leaves, was dried over a fire, torn into little shreds, and then rolled into cigarettes in green leaves, also previously dried at the fire. A single cigarette makes the round of a number of smokers. In smoking the Papuans swallow the smoke, and blow the rest through the nose.

As the *Keu* has soporific qualities, the Papuans have devised a means of keeping any one who has succumbed to its influence in a wakeful condition. The victim to its power betakes himself to a friend, who with a stalk of grass tickles the cornea and conjunctiva of his eyes until they become full of tears. This is repeated until the patient declares that he feels no longer sleepy. This operation is regarded as a very pleasant one, but "whether it always succeeds," remarks M. Maclay, "is another question."

J. C. GALTON

EPIDEMICS[3]

WE are now entering on our thirtieth session, and, I trust, with reason to believe that our progress is satisfactory, and our work such as to prove that the Society is fulfilling the main object for which it was founded. Though not one of the largest, it is certainly not one of the least active or important among the medical societies of the metropolis, whilst the cosmopolitan range of subjects embraced within the scope of its inquiry renders its proceedings of far more than mere local interest.

The *raison d'etre* of this Society is the investigation and development of our knowledge of disease in motion. It involves much, for any disease where it spreads, whether among the people of a house, a ship, a village, a city, a province, or a continent, is an epidemic, and comes within the scope of our inquiry. Dysentery and malarious fevers are typically *endemic* diseases, but in India they may and do at times assume a dangerously epidemic character. But it is not meant that our inquiries should be restricted to mere epidemicity alone; we cannot advantageously study one phase of the natural history of disease and exclude others. There is so much in etiology, semeiology, and pathology both human and comparative that concerns our department of research that we may not ignore the means by which we gain the most important of all information to the epidemiologist—namely, the means of discriminating one form of disease from another. Therefore, though our proceedings will naturally refer mainly to epidemic disease, we shall thankfully receive and carefully consider all information that may tend in any way to throw light on the causal relations, and on the influences exercised by climate, season, locality, food, and occupation on the genesis and dissemination of all diseases, not excluding those of the lower animals, nor even of plant life. I might illustrate this by referring to the importance of discriminating between the different forms of fever that occur in India. It is well known that the greatest proportion of mortality in India is ascribed to fevers. The highest death-rate[1] was registered in Bombay, where it equalled 20·82 per 1000; in Madras the deaths of 469,241 persons gave a death-rate of 10·08 per 1,000. Both here and at Bombay, however, the mortality recorded was greatly aggravated by famine.

There is no doubt that, under the heading Fever, many deaths from other causes are recorded, and we may probably refer a large proportion of them to diseases of an inflammatory character affecting the thoraic or other viscera, or to complications involving inflammatory action elsewhere. In a vast country like India, where the population is so extensive, and the means of registration of necessity limited, often not under medical supervision at all, it is not to be expected that greater accuracy can be ensured; but, were it possible to discriminate among the various forms of disease returned as causing the mortality by fever, we should have a very different result from the present. One can hardly refer to this subject without expressing admiration at the great progress that has been made of late years in registration under the direction of the sanitary authorities of India, and confidence that it will continue to improve, and render the statistics more valuable even than they are now. Of course, where the registration of death is not subject to medical definition discrimination between the various forms of fever or other death-causes could hardly be expected; and therefore the example I have just given is hardly so good an illustration of what I refer to as typhoid, for which we have accurate medical statistics of our European troops in India. It is within my recollection that attention was first called to the existence of this form of fever in India, and yet there can be, I suppose, no doubt that it has always been there. It soon became generally recognised as a new discovery in India, and people wondered how it had escaped observation hitherto, whilst some perchance regarded it as a new disease. But it was just this power of discriminating observation that is so rare and so valuable that had been wanting; it was this that, exercised by Budd, Jenner, Stewart, Murchison, and others after them, established a new era in the nosology of fevers in England; and it was this, that, a little later, in India, discriminated between certain forms of remittent and enteric (*i.e.*, between malarious and specific) fevers, and that will, I hope, ere long further discriminate and rearrange the nosology of fevers in India and the tropics.

Now typhoid or enteric fever is an important cause of mortality among our young European soldiers in India; and it raises or suggests questions of great importance in regard to them—such, for example, as the right age, time, and seasons for sending them to India; to say nothing of the hygienic questions as to sanitary measures arising out of its causal relations. The Sanitary Commissioner's Report of 1877 says that out of 233 cases of typhoid, 92, or 39 per cent., proved fatal; the admission rate being 4·1 per 1,000 of strength. It moreover appears that 2·45 per cent. occurred at or under twenty-four years of age; 1·55 at twenty-five to twenty-nine; 0·99 at thirty to thirty-four; and a few or none above that age; showing that the disease tells most severely on the younger men—in this respect resembling typhoid in England. Again, Bryden, in his Report of the Statistical History of the European Army in India up to 1876 (published 1878),

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[1] *Pinang* in the Malay language.

[2] *Siri* in Malay.

[3] Abstract of Presidential Address at the Epidemiological Society, delivered on November 5, 1879, by Sir Joseph Fayrer, K.C.S.I., LL.D., M.D., F.R.S.

Vide Report of Sanitary Commission of the Government of India for 1877.